We claim:

1. A method for distinguishing malignant from benign thyroid samples, comprising:
   determining presence of a T →A transversion at nucleotide 1796 of *BRAF* according to SEQ ID NO: 1 in a thyroid sample of a human, wherein presence of the transversion indicates a malignant thyroid neoplasm and absence of the transversion indicates a benign neoplasm or sample.
2. The method of claim 1 wherein the thyroid sample is a fine needle aspirate (FNA).
3. The method of claim 1 wherein the thyroid sample is a tissue sample.
4. The method of claim 1 wherein the thyroid sample is a cytological sample.
5. The method of claim 1 further comprising:
   providing a diagnosis based on the presence or absence of the transversion.
6. The method of claim 1 further comprising:
   providing a prognosis based on the presence or absence of the transversion.
7. The method of claim 1 further comprising:
   determining a therapeutic regimen for the human using as a factor the presence or absence of the transversion.
8. The method of claim 3 wherein the sample has a follicular morphology.
9. The method of claim 3 wherein the sample as a papillary morphology.
10. A method for distinguishing malignant from benign thyroid samples, comprising:
    determining presence of a T →A transversion at nucleotide 1796 of *BRAF* according to SEQ ID NO: 1 in a blood sample of a human, wherein presence of the transversion indicates a malignant thyroid neoplasm in the human and absence of the transversion indicates a benign neoplasm or no neoplasm.
11. A method for detecting a mutation at nucleotide 1796 of *BRAF,* comprising:
    amplifying all or part of exon 15 of *BRAF* from a test sample to form amplified products, wherein said part comprises at least nucleotides 1792 to 1799 of *BRAF*;
    digesting the amplified products with restriction endonuclease TspRI to form digested products;
    identifying a mutation at nucleotide 1796 if the digested products contain:

- one fragment fewer than digested products formed when using wild-type *BRAF* as a template for amplifying and digesting; or
- one additional fragment compared to digested products formed when using wild-type *BRAF* as a template for amplifying or digesting.

12. The method of claim 11 wherein the test sample is from a thyroid.
13. The method of claim 11 wherein the test sample is an FNA from a thyroid.
14. The method of claim 11 wherein the test sample is a tissue sample from a thyroid.
15. A method of treating a thyroid cancer patient, comprising:

    administering to the patient an effective amount of an inhibitor of BRAF serine/threonine kinase activity or expression.
16. The method of claim 15 wherein the inhibitor is an antibody which binds to BRAF serine/threonine kinase.
17. The method of claim 15 wherein the inhibitor is an antisense oligonucleotide which is complementary to mRNA encoding BRAF serine/threonine kinase.
18. The method of claim 15 wherein the inhibitor is siRNA which is complementary to mRNA encoding BRAF serine/threonine kinase.
19. The method of claim 15 wherein the inhibitor is an antisense oligonucleotide which is made from an antisense construct.
20. A method of treating a thyroid cancer patient, comprising:

    administering to the patient an effective amount of an inhibitor of Ras-Raf-MAPK pathway or Raf/MEK/ERK signaling pathway.
21. The method of claim 20 wherein the inhibitor is CI 1040.
22. The method of claim 20 wherein the inhibitor is BAY 43-9006.
23. The method of claim 6 wherein the presence of the transversion indicates a higher risk of neck lymph node metastasis.
24. The method of claim 6 wherein the presence of the transversion indicates a higher risk of cancer recurrence.